Combat Crew

strategic air command

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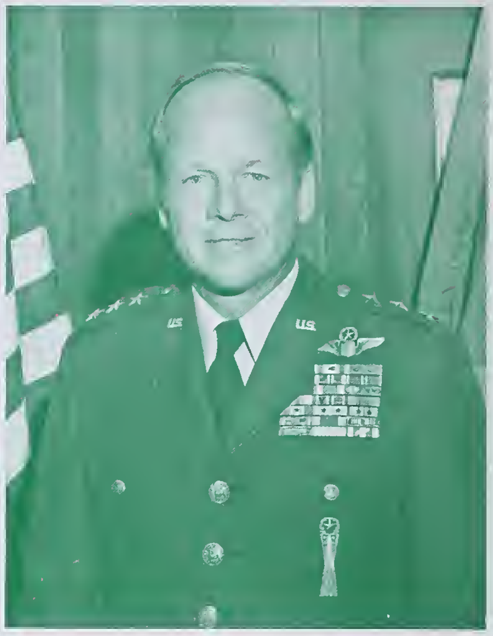

Lt. Gen. Lloyd R. Leavitt, Jr.
Vice Commander in Chief, SAC

During the past few months, there has been a great deal of concern expressed by aircrews about the advantages and disadvantages of an Air Force career. This concern is not limited to aircrews — certainly missile crews and non-rated officers also worry about their careers. But, the wide-spread national publicity related to the airline pilot shortage provided a focus for discussion among pilots. The discussion has now broadened throughout the crew force to include all specialties. This article contains some of my thoughts about aircrew duty in SAC and an Air Force career. As you will recall, General Ellis discussed crew duty in the September *Combat Crew;* these are follow-on thoughts to his earlier article.

We all make career decisions based upon our personal views. As an individual, you are acutely conscious of current policies that affect your life. You are probably not too interested in the evolution of the policies that we have today, but we must look at the history of past policies before recommending major changes. We have the finest Air Force in the world, and we want to avoid repeating previous errors. Do not assume, however, that SAC is standing pat. On the contrary, as this article will disclose, many ideas are being considered. Our common objective is to keep the best policies, to refine the not-so-good, and to elminate the harmful.

THE THREAT AND SAC

Military subjects always seem to get started with a discussion of "The Threat"; this is no exception. You are well aware of increasing Soviet strategic capabilities. The threat will become most acute in the early 1980s when Minutemen will be at risk to a larger Soviet ICBM force possessing increased accuracy. Clearly, the United States cannot maintain essential equivalence with the Soviet Union unless strategic forces are modernized.

For this reason, SAC has not been standing still, nor do we intend to stand still in the future. Through the years, Minuteman has been improved in a number of ways, the most dramatic being Minuteman III with a MIRV capability. SAC is now pushing hard for a new M-X missile with the basing scheme not yet decided. We continue to press for a new penetrating bomber; but the aircraft has not yet been selected, nor do we have program approval. Nevertheless, there is considerable support throughout the nation and in Congress for a modern penetrator. Whether we will field a new penetrator remains to be seen. Meanwhile, ALCM is moving ahead and will be available in the mid-80s. Turning to tankers, the first KC-10s will appear in the early '80s. Also, we need to re-engine the KC-135 fleet and hope for a favorable decision following the research and development phase.

The Secretary of Defense has stated that the United States will maintain essential equivalence with the Soviet Union. Actions are under way that will help — ALCM being an outstanding example. Nevertheless, we face some uncomfortable years in the early '80s because of the increasing Soviet threat.

Until modernization is a reality, SAC has to achieve maximum combat readiness from existing systems — trained, motivated people are absolutely essential. The bottom line is that SAC needs you to help meet that threat.

Many of you are saying to yourselves at this point, "If the mission is so damned important, why doesn't someone pay more attention to us?" Let me assure you that we are paying attention to you and your concerns. The following paragraphs will outline some programs under study and tell you how we are leaning.

PILOT FACTORS

About seven years ago, there were predictions of an acute pilot shortage, so pilot production was greatly increased. Many of you were the victims, in one sense, of this over-production. As the Air Force reduced following the Vietnam War, there were more pilots than there were cockpits to fly. The Air Force was forced to move you rapidly from cockpit assignments into nonflying duties or to assign you as a third pilot in an aircraft designed for only two pilots. We want to avoid similar circumstances in the future.

When we had too many pilots, the Air Force moved experienced officers from the cockpit in order to give young fliers the best possible opportunity to gain experience. We paid a price for that policy. The price was that experienced leadership and combat know-how disappeared from bomber and tanker squadrons. To correct the imbalance, some seasoned crews will return to squadron duty. As a first step, the flight commander will become a designated squadron level position — a major and have responsibilities commensurate with the rank and position. For example, flight commanders will command bomber and tanker cells during contingency operations or contingency training. Although they will be responsible for their flights on the ground and in the air, the emphasis will be on airborne operations involving multiple aircraft. Pilot aircrew members should see flight commander as a logical progression step leading to squadron operations officer and squadron commander. In turn, we will expect flight commanders to add leadership and flying ability to their squadrons.

As part of the flight commander policy, SAC will try to respect the military axiom that senior officers do not work for junior officers. Recognizing that many major navigators and EWOs are currently serving in SAC operational squadrons, these higher ranking officers will usually be assigned to standardization or flight commander crews. Adherence to this policy will improve the image of experienced navigators and EWOs who are needed in key supervisory jobs at squadron level.

Hand in hand with this new policy is a drive to improve the perception of combat crew promotion opportunity. Combat crews are the backbone of SAC. Because of this, aircrews and missile crews will receive a proportionate share of the promotions, just as crews represent a proportionate share of the talent. Numbers speak louder than words — the recent captain-to-major results clearly showed that combat crew duty was a good way to get promoted. Seventy-four percent of the "first time eligible" (FTE) captains serving on SAC combat crews were promoted; sixty-eight percent of the FTE captains serving elsewhere in SAC were promoted. Do not believe that you must leave crew duty in order to become a major. Furthermore, majors serving on combat crews can expect to get a fair share of promotions to lieutenant colonel.

We are especially proud of the fact that SAC today has navigators serving as general officers, wing commanders, group commanders, squadron commanders and in key staff billets. The trend is healthy, and SAC will continue to honor the spirit and intent of Title 10, U.S. Code.

OVER-SUPERVISION

A frequent complaint expressed by aircrews is that the Air Force over-supervises. In their opinion, there are too many decisions made at wing level or above, too little opportunity for crew members to make decisions, too many flight checks, too many inspections and staff assistance visits, and too much "CYA" when things might go wrong. What can be done?

As mentioned earlier, our greatest need in coming years is a competent, motivated force. In order to meet that need, we must foster initiative among junior officers and noncommissioned officers. The most critical decisions in battle are made by those who actually lead and fight. General Pershing in World War I described this precept precisely, "Planning is ten percent, execution is ninety percent." SAC has a delicate supervisory balance to strike because of the requirement for centralized control of nuclear weapons. Since the National Command Authority (NCA) must have absolute control over the release and use of nuclear weapons, SAC cannot decentralize the command and control structure in any way that would weaken NCA absolute control. On the other hand, we may be able to decentralize other decisions that influence your lives and affect your performance.

Under consideration are several ways to decentralize decisionmaking in SAC. One idea that seems to have merit is to rely upon the "S" "E" and "R" crew categories as a guide to decentralizing supervision. This idea would allow highly qualified crews ("S" "E") to be delegated responsibilities above and beyond those given less qualified crews.

We must leave more room for aircraft commander judgment. Under consideration is a "Mulligan system" (non-golfers should get someone to explain the term). Under the proposal, the aircraft commander would be able to declare a "Mulligan" now and then, the exact frequency yet to be determined. On a "Mulligan" flight, the crew could practice whatever they felt was necessary to improve over-all proficiency and combat readiness. The accomplishments would count as creditable activity towards completion of semester training requirements, but not be otherwise evaluated. Remember, the "Mulligan" is intended to sharpen crew skills by allowing additional practice without the stigma of failure.

EDUCATION

Another common gripe is the pressure placed upon officers to seek a graduate degree and PME. There are several reasons why education has been pushed — not all of them may make sense to you.

First, consider your undergraduate training obtained prior to coming into the Air Force. Although we accepted officers with varying educational backgrounds, there is an increasing requirement for people with technical degrees. Some degrees that were acceptable for commissioning purposes do not have a long term payoff in the Air Force — the individual becomes more useful with a degree which closely relates to the mainstream of our profession. Second, many technical degrees, such as electrical engineering, become rapidly outmoded unless they are updated from time to time. Realizing that we can't all be technicians, many officers have recognized the advantage of receiving other relevant training, such as business administration, to upgrade their undergraduate degrees. The Air Force also believes that getting exposed to fresh ideas and different viewpoints from time to time is a healthy educational process for anyone.

Turning to professional military education (PME), the system is intended to broaden your knowledge of the military and to sharpen your skills for higher level command and staff jobs; therefore, continued emphasis on PME is appropriate.

Promotion boards frequently assume, when other factors are equal, that an officer having completed more formal education and more professional education than another officer has greater potential value to the Air Force. But, there should be a happy medium. Every young officer does not need a masters or a doctorate to succeed in present duties — in fact, it might be better in the long term if the graduate training was deferred until completing aircrew duty in order to keep graduate work fresh in mind for later assignments. The best way the Air Force can control this problem is to insure that promotion boards do not overrate education in contrast to other important factors — the most important being job performance. We will try to work this problem with the Air Staff, but in the meantime recognize a graduate degree and PME probably enhance your promotion opportunity.

JOB SECURITY

Job security keeps popping up in retention discussions. Air Force officers are well educated, competitive with their contemporaries in civilian society, and capable of making their way in any chosen profession. For approximately the same reasons that the Air Force needs young officers, the civilian sector also seeks their employment. Knowing this, it is easy to understand why many officers object to the competitive system under which they exist in the Air Force. They view the "up or out" promotion system as a threat to their family security and a reflection on their overall competence.

Let's try to put this problem in perspective. The principal impact of an "up or out" policy is that you may not be continued until 20-year retirement. Many of you do not realize that since 1968 we have had an Air Force policy that allows all reserve majors not promoted to temporary lieutenant colonel to serve until retirement at 20 years. RegAF officers selected for permanent major can at least expect 21 years of service. So the problem really boils down to first lieutenants and captains who fail selection. How many are we talking about? First, look at the size of the rated force. The pilot inventory is, or is programmed to be, approximately 23,500 and the navigator inventory (including EWs) approximately 10,000 for the next five years. Considering the size of the total rated force (33,500), the forced separations for failure to be promoted are expected to be very low. To put this in proper perspective, in FY 77 there were only 129 pilots and 106 navigators separated from service for non-promotion and in FY 78 even fewer. The number we expect to eliminate in the future for this reason is expected to be 1% or less of the total rated force.

As you can see, your chances of being eliminated from the Air Force for non-selection are quite low. A very high percentage of the officers who are performing well as captains today will be promoted to major and will complete 20 or more years of service. Whether we should retain in the Air Force "passed over" captains, thereby denying cockpit opportunities to younger officers, is a question with at least two sides. As we study this issue, remember that "up or out" is not a threat to most majors or captains.

PERSONNEL POLICIES

As you probably noticed, this article has not discussed missile crews to any great extent. One reason is that the SAC missile program seems to satisfy both command requirements and individual needs. The officer entering the program has a clear view of expected duties, the length of his or her tour, opportunities for progression in the force, an opportunity for advanced education and an overall sense of career planning. In contrast, the aircrew program is not as well defined and lacks many of the advantages mentioned above. One problem is how to improve career planning for SAC aircrews within the broad limits dictated by Air Force personnel policies. Air Force limitations were imposed for several reasons: the high cost of training aircrews, the necessity to stabilize our aircrew inventory, the pilot surplus that existed in previous years, and the reduction in funds available for PCS, TDY and formal training. These factors have combined in a disadvantageous way to some aircrews. Little opportunity exists to move from one aircraft to another or from one MAJCOM to another. Furthermore, many people who wanted to stay on aircrews were forced into the Rated Supplement or into non-flying jobs. These and other factors have adversely impacted individual career intentions.

SAC is now working on several ideas that will help alleviate aircrew personnel problems. If these plans materialize, they will allow greater freedom of choice and career broadening, while at the same time allowing those who want to stay longer in the cockpit to do so. A test program will begin in January with letters being sent to some young officers who are just entering their fifth year of rated service. If SAC can handle it, the program will continue for succeeding groups of officers entering their fifth year and also expand, where possible, to include more experienced officers. Meanwhile, we will continue to work more experienced officers on the basis of their Form 90s. For this reason, insure that the Form 90 reflects your career aspirations.

Now let's return to a discussion of the new plan for officers first entering the five year zone. The letter received by some of these officers will offer several options. Officers will be encouraged to prioritize their choices; then, the SAC staff will try to work their individual preference in descending order of priority. Within approximately two months, SAC DP will advise the officer of the outcome. SAC cannot guarantee that all officers will get their requests; in that case they will be so notified. Remembering that only one choice can be finally achieved, the choices will go something like this:

1. Stay in present assignment.
2. Move to another geographical area (must have three years on station).
3. Be assigned to a staff assignment at Numbered Air Force or MAJCOM.
4. Transition to a different SAC aircraft, to include B-52D, B-52G/H, K/R/EC-135 or U-2.
5. Become a CCTS instructor or CEVG evaluator, if qualified.
6. Swap assignments with a MAC contemporary for four years flying the C-141 or T-39.
7. Join the F/FB-111 program. First four years following CCTS will be spent in TAC or USAFE. Next four years will be in FB-111s in SAC with no CCTS in between.
8. Transfer to another command (cannot be worked by SAC HQ alone).

Recognizing that these choices do not represent everyone's aspirations, there will be included in the letter an opportunity to write in a particular assignment that the individual seeks. Of course, special assignments may be more difficult for DP to work.

One improvement that has already been instituted is a revision to the Northern Tier policy. General Ellis has been able to reduce the Northern Tier tour to three years for aircrews. When coupled with the plan proposed in the preceding paragraphs, you can see that we are seeking ways to improve career opportunities and living conditions for aircrews and their families.

ODDS AND ENDS

Some of the potential improvements resist precise categorization. Nevertheless, in sum they are important and, for lack of a better term, call them "odds and ends." They influence your morale, your attitude towards flying and your overall satisfaction with an Air Force career. A few of the issues under study are listed in the following paragraphs.

Let's start with training. SAC already has two B-52 wings in a test program that features more sorties of shorter duration. The idea is to get you in the air more often and to sharpen the high priority crew skills. The test program has been running about three months and results look good. Most aircrews seem to like the opportunity to fly more often. No insurmountable logistics problems have developed and our preliminary judgment is to expand the test program to include all wings in 1979.

Military service will never be as prosaic as working in a bank, department store or insurance agency. In fact, most of us don't want that life style. On the other hand, SAC training has become a little stodgy and some adventure or "romance" is being added to the training syllabus. This past year, SAC greatly increased RED FLAG participation; next year there will be roughly twice as many opportunities for RED FLAG. Some of you have already gone to MAPLE FLAG — the Canadian equivalent of RED FLAG. We intend to expand participation in that program. SAC dropped more live bombs this year than any year since the Vietnam war ended. Intentions are to continue dropping on a variety of ranges including tactical ranges near your home station. SAC has a world-wide contingency responsibility and will participate wherever possible in contingency exercises. Because our crew force is fairly young, some have not had overseas deployments. Recent progress has been made — B-52s participated in COLD FIRE in Germany, tankers participated in the Mediterranean operating from Helenikon AB, Greece, and reconnaissance units also see more of Europe than in days past. As the opportunity arises, SAC will fly more training missions in Europe with the idea that air crews "need to know the territory." These overseas deployments will be interspersed with enough free time to allow you to see some of that interesting part of the world. The reason we are pushing for more exercises, more varied training, and more deployments is a belief that crews will perform well under stress if they have been exposed to flying under a variety of conditions. As you build confidence, you gain combat readiness.

Turning back to the navigator training program, the SAC Staff is working with the Air Staff, MAC and ATC to use the T-43 for long celestial navigation training missions. The plan is to move a T-43 into your base for a few days and fly navigators and EWOs on a long celestial mission. We visualize a mission leaving from home plate during the daytime with a day celestial leg accomplished outbound. The aircraft would then RON returning the following night with a night celestial mission. Most navigators believe there is no substitute for experience gained while flying long over-water legs or long legs through the Arctic.

In conclusion, serving as a combat crew member in SAC or elsewhere in the Air Force probably will never be easy. Recognizing the inherent difficulties of Air Force life, our objective is to offset the difficulties of duty by making your job challenging and rewarding. According to many of you, this has not been achieved — our objective is to improve your perception of the Air Force in the future. Griping is a soldierly characteristic tracing back to antiquity. We all gripe from time to time, but remember before tossing away your Air Force Career that "it's better to have a few fleas than no dog at all." Meanwhile, we're looking for flea powder. ★★★

Combat Crew

Magazine of the Strategic Air Command - 29th Year of Publication

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ON OUR COVER

Seasons greetings from the staff of Combat Crew.

SACRP 127-1 **Vol. XXVIII, No. 12** **DECEMBER 1978**

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Private subscriptions are available from: The Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Price: $1.00 per copy, $12.00 per year (foreign: $1.30 per copy, $15.00 per year). Authority to publish this periodical automatically expires on 26 January 1980, unless its continuance is authorized by the approving authority prior to that date. Contributions are encouraged as well as comments and criticisms. Direct correspondence with the Editor is authorized. Address correspondence to Editor, COMBAT CREW, Hq SAC - IGFC, Offutt AFB, Ne. 68113.

1978 SAC SAFETY SEMINAR . . .

Col Burr V. Miller, Jr., delivers the opening message to SAC's safety people. (Photos by SSGT Junius De Boue.)

A COMMON SENSE APPROACH

Maj Stephen J. Miller
EDITOR

Safety professionals, nearly 130 strong, gathered at Carswell AFB to attend the 1978 SAC Safety Seminar. Their purpose was to discuss the current problems facing unit safety programs, to exchange ideas and to look for solutions to problems.

Colonel Burr V. Miller, Jr., the SAC Director of Safety, opened the seminar by dedicating this year's session to the memory of Major James H. Unger, Jr., 8th Air Force Nuclear Safety Officer. Col Miller went on to point out that "to be effective in the safety business, safety officers, NCO's and civilians have to get out of their offices and talk to their people about safety problems and see firsthand what is happening on the base." He emphasized the need for more stability in the safety field as well as the need for top quality people in all safety positions.

Col Miller further stressed the need for unit commanders to leave their doors open to their safety people. He emphasized that safety people have to use a common sense approach to the problems they face. "We tend to make our job too complicated. Common sense is all we have working for us," he stated.

The principal guest speaker for this year's conference was Brigadier Gen-

Continued on page 22

RED FLAG

THE NEXT BEST THING TO COMBAT

Capt Bill Craigg
528th Bomb Sq, Plattsburgh AFB

For the "old heads," it brings back unpleasant memories of excursions to Hanoi and Haiphong. For the "new guys," it's a hair-raising introduction to a classic situation — "Hey, they're shooting at me!" It's called Red Flag, the closest thing to a wartime environment.

Landing at Nellis AFB, Nevada, is like flying into a combat zone. The ramp is crowded with fighters camouflaged in their war paint, "sandy" rescue helicopters, gunships, and now, SAC FB-111s. Crews heading for their aircraft have the grim-but-determined look of men about to prove themselves, and a sweat-soaked F-4 crew stumbling from their cockpit look as though they have been through the proverbial "valley of the shadow of death." Maintenance teams seem intent on refueling and rearming their birds in the shortest possible time. The atmosphere infects the FB crews even before they report to the Red Flag Center for the orientation briefing.

There is a war on. Intelligence briefs that the enemy Red Force has taken over a peaceful country north of Las Vegas. In support of the lawful government, the allied Blue Forces are launching coordinated attacks on the invaders. The FB-111s will operate as single-ship, low altitude penetrators to strike airfields and enemy-held industrial complexes. The missions will be flown in accordance with SAC Tactical Doctrine, utilizing the terrain following radar, electronic countermeasures, and chaff. Bomb-nav and defensive systems specialized briefings cover ingress and egress routes, targets, and the air order of battle. The emphasis is exemplified by a familiar motto, "Our Mission is Bombs on Targets."

The TAC Range Briefing stresses that safety is paramount. Despite the emphasis on realism, Red Flag is still a peace time training mission. Rules of engagement and radio procedures are covered in detail. If an unsafe situation develops, the phrase "knock it off" will terminate an air-to-air attack. At low altitudes and near-supersonic speeds, the margin for error is narrow, and while the enemy threats are simulated, the ground remains a 100 percent reliable danger.

As the sun came up the next morning, the flight of three FB-111s breaks ground and joins up into fingertip formation for the leg to the cell breakup and start descent point. Starting down the chute into low level Plattsburgh's Crew S-04, was acutely aware that the next 150 miles of desert concealed mobile anti-aircraft artillery (AAA) and surface-to-air missiles (SAM) sites eager to claim a kill on the SAC "invaders." Crew E-13, coming in ten minutes later, were most conscious of the swarms of patrolling F-5 "Migs" of the aggressor squadron. Flying the "cleanup slot," Crew E-23 inherits the hornet's nest kicked up by lead and number two; hardly sporting, since the Red Force already knew the approximate routes, targets, and arrival times of the bombers.

As they level off and cross the line into enemy territory, the ECM systems are turned on and the chaff dispensers armed. In any game of hide and seek, the best way to avoid being "tagged" is not to be seen at all. The pilot concentrates on flying low and fast while the right-seater nurses his navigation equipment and triple-checks the switches in the bombing system. Both crewmembers are constantly searching for enemy fighters and for visual landmarks to check their course. Being "shot down" is embarrassing, but getting lost is even worse.

The first threat comes up. A SAM signal at two o'clock! Working as a well-drilled team, the pilot executes the proper defensive maneuver while his navigator operates the ECM. The enemy radar loses them. Did they track the bomber long enough to claim a kill? The crew won't find out until the post mission critique, but for now they press on, getting back on centerline and waiting for the next attack.

Behind them, the second FB-111 evades an AAA gunner and then gets picked up by a Marine F-4. There is time for one quick jink before the fighter zooms past them; later, the gun-sight camera film will tell the story. By this time, Red Flag has stopped being a game in the minds of the crews as they fight to reach their targets.

Approaching the initial point (IP), target area defenses saturate the ECM; but now the navigator's world narrows down to his bombing system and radar scope. The pilot accelerates and turns to bomb run heading while the navigator concentrates on identifying the proper aim point — one mountain peak among dozens — in the radar. His crosshairs fall between two identical peaks. Which one is the off-set? He has less than 120 seconds to decide.

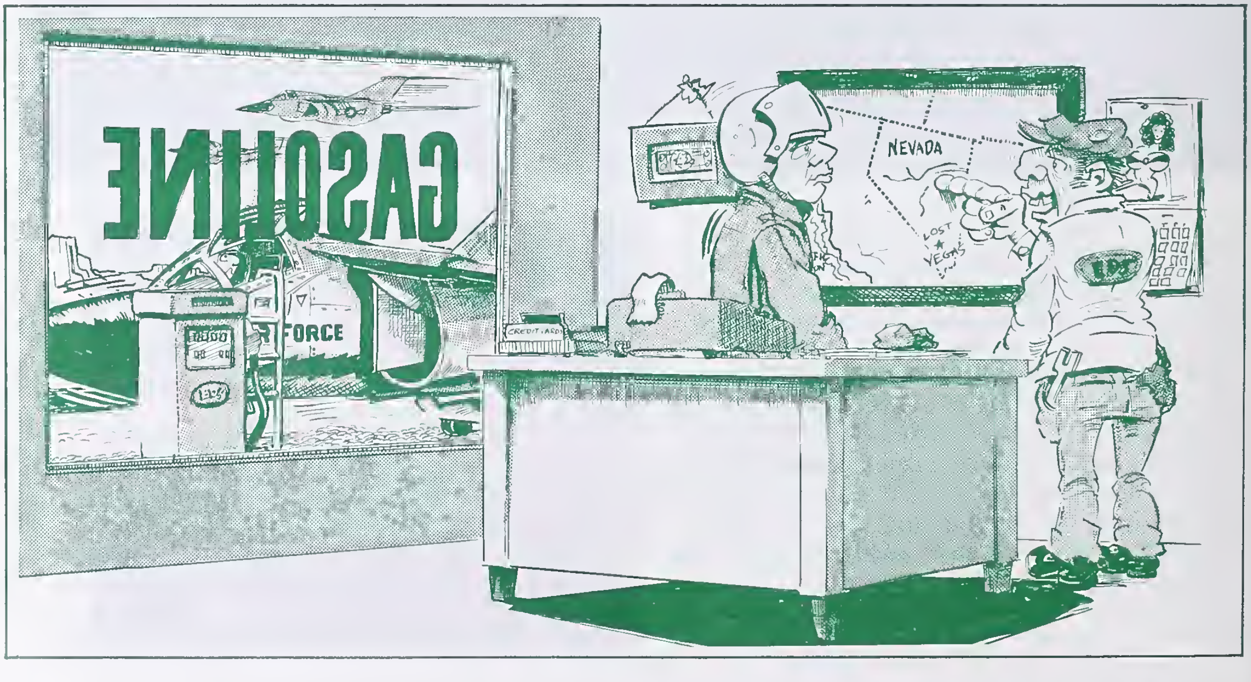
The bomb-nav advisor had briefed that there would be a long, curved ridge line just to the north of the point, and there it is. Now, position the crosshairs and finish the checklist. Cross-check landmarks and time-to-release with the pilot. Here comes his visual timing initiation point, right where it should be. Refine the crosshair placement. Let's show them how it's done.

At ten seconds to go, the plane pops up over a ridge and the pilot sees the target airfield straight ahead. Bombs away — and the plane jumps as the 2000-pound concrete bomb leaves the weapons bay. They break right into the post-release turn and execute the maneuver technically known as "getting the _____ out of there," hugging the tree tops and running the gauntlet back to friendly territory.

After climbing out for the short leg back to Nellis, it's a temptation to check the wings for bullet holes and to start composing a citation to accompany a Distinguished Flying Cross . . . But the real reward from Red Flag is the experience of operating and surviving in a hostile air combat environment. The crewmember gains confidence in his aircraft, defensive tactics, and in his ability to "Strike and Return." For SAC FB-111s, Red Flag is something more than a training exercise — it's the next best thing to actual combat experience.

Editor's note. Plattsburgh AFB FB-111 crews participating in this Red Flag Exercise were:

- **Crew S-04: P Capt Warren Laws, RN Capt Rich Nowicki.**
- **Crew E-13: P Capt Quentin Killiam, RN Capt Joe McCue.**
- **Crew E-23: P Capt Tom Larkin, RN Capt Rich Barringer.**



OPS HAZARDS

B-52 BECOMES A FLASHER. Twenty minutes after entry into a low level route, a B-52D pilot noticed a bright flash near the front cockpit window. He initially attributed the flash to lightning and asked the RN to check for thunderstorm activity. The RN reported he had no significant weather. The pilot then noticed another bright flash.

As the search began for the source of the flash, the pilot noted electrical arcing across the entire forward instrument panel. These flashes were bright enough to illuminate the entire cockpit and increased in frequency and intensity.

The crew immediately aborted the low level route and climbed to 10,000 feet. They began systematically shutting down all auxiliary electrical systems while the spare pilot was ready with a fire extinguisher in case a fire broke out.

When the pilot turned off the windshield anti-ice/defogging switch, the flashes ceased. With this system off, the crew made a slow descent for landing to allow the windows to adjust to ambient temperatures. An uneventful landing was made.

Maintenance found a frayed wire leading to the pilot's number two window. This wire was repaired and electrical systems checked. No further electrical problems with this aircraft have been reported.

THE NEXT PITCH MAY BE A CURVE.

During the month of September, two uncommanded pitchdowns occurred on FB-111 flights. One occurred during a low level flight at 1000 feet AGL. This FB-111 crew was using Auto-TFR in night VMC conditions. The 8-10 degree pitchdown was coincident with land-water transition and the associated transition to the LARA override mode. After passing 830 feet AGL an automatic fly-up occurred.

After extensive troubleshooting, the left TFR channel of the computer (S/N 158) failed the altimeter override blanking test. This unit was replaced and no reoccurrences of a pitchdown have been reported.

The second pitchdown occurred after level off at FL 190. The FB-111 violently pitched down 20-30 degrees. The aircraft was recovered at FL 180 when the damper was turned off and successful recovery was made.

Both the yaw computer and the feel trim assembly failed maintenance tests and were repaired. No other problems have been reported. Crewmembers must be ready for uncommanded pitch inputs when flying at any altitude.

HANGAR FLYING WITH CFIC

What is the current instructor role in the Strategic Air Command?

Lt Col John Dean, USAF, ret.

The concepts of what the SAC instructor is and what he accomplishes has changed drastically in the last few years. You are no longer a crewmember with an additional duty who simply monitors, evaluates, and sometimes babysits fully qualified personnel. You are now a responsible part of your unit's staff, fulfilling a vital function in SAC by providing expertise, tradition, and continuity to your unit. With the rapid turnover of squadron commanders and operations officers, you have a responsibility for insuring that on the long term, the spirit and proficiency of the crew force remains high in all areas.

We no longer have many "old heads" around. You are now the "old heads," the knowledge, and the skill of this command You are the best

SAC has and you are good at what you do. SAC is depending on you, whether you have 1000 hours or 5000 hours. We need you to identify problem areas and to do something about them — those we do not or cannot see. By this, we mean submit a change, or two, or a hundred if you can. Because we have done something for years doesn't mean it is right. Don't let us be wrong forever. Help us correct our errors and do away with weak spots. You, the instructors, are closest to the problems and work with them daily. Logically you know best how to correct them. Your ideas can provide new directions for all of us to follow. We have seen changes take place in the last few years which were certainly not considered possible in the past—a more realistic approach to bold print, doing away with the hood or vision restriction device, engine out landings, a more realistic simulator program, and many others. We need more improvements like these and we hope they continue. Your ideas not only improve techniques but directly affect safety. Even minor changes which remove little irritants or provide a more expedient method of useless procedures or the addition of needed regulations or policies can help this command. In the overall picture, we are talking about a many faceted job, one which even affects retention. If it is a better place in which to live and work, it will be a better place in which to make a career.

Let's discuss your responsibilities in more detail, and to be more specific, those to your commander and to your students. In regard to your commander, if you could trade places with him you would find that he sees you as a key part of his staff. You have your finger on the pulse of his squadron as far as training, proficiency and safety goes. You must provide a systematic, adequate and safe program to provide the necessary in-unit training. Remember, his most reliable information on the proficiency of his crewmembers comes from you.

Seek out the unit's weaknesses in the proficiency area and provide a program to fix them. Your commander simply does not have the time nor the opportunities to judge these weaknesses as quickly as you can. His only feel for the student's progress or potential is through you and your grade sheets. Be thorough, be accurate, be honest.

If you award a grade of outstanding or satisfactory, be sure that is what you mean for he is using this information in order to make decisions on crew assignments, etc. He depends on your honesty. He places a great deal of importance on what you say on these grade sheets so help him by telling it like it is!

Your training program is of vital importance to SAC and your unit's future. Whatever you are doing now will directly control the operational and safety aspects of your unit in the future. One final responsibility to your commander: keep the overall objective of your unit uppermost in your mind; its operational capability. You should not only be alert for areas of weakness which could affect this capability, but you should provide the plans to correct them. Successful completion of CEVG, ORI's, etc., are part of your responsibilities. They directly reflect how you are doing your job.

The most important obligation and responsibility is to your student. Your student deserves the best you have to offer and should receive it. Learning should take place because of, not in spite of, the instructor. The orders that were cut did not make an instructor out of you overnight. Here is where some self-help must come into being. You must strive to be the very best instructor you can. How long has it been since you looked at a book on aerodynamics? What are the basic principles of education? Do you know why learning takes place? How about public speaking? Learning can be enjoyable and the environment you create will definitely affect the results you achieve. Nothing creates better and faster learning than a pleasant atmosphere to work in. You, the instructor, control this. A little review in the psychology of teaching might not hurt. The impression you make will be lasting ones. No one forgets their instructors, good or bad. You might as well be remembered as a good one.

SOME DO'S AND DON'TS

Do be a professional. You should be proud of what you are doing. You are a professional; be one or get out of the game. Make yourself available to your unit's personnel. By this, we mean you should let them know your time is theirs and you are willing to give it to them. Let them know you are interested in their problems and want to hear their ideas. You may be surprised to find out that they have better ideas than you or may see it from a different point of view. To some, the unit instructor may seem unapproachable simply because of his rank or position. Don't let this happen to you. It is your responsibility to do away with this image.

Do stress safety. We are operating very large and sophisticated machines and must continue to emphasize safety at all times. If you ignore it, so will your students. Remember, what you say and do is the gospel and you will be imitated. You haven't been exposed to embarrassment until your student does something that causes a failure on a check and then says, "Well sir, my instructor does that all the time." So don't deviate from prescribed procedures. Your actions will be copied and safety will be compromised.

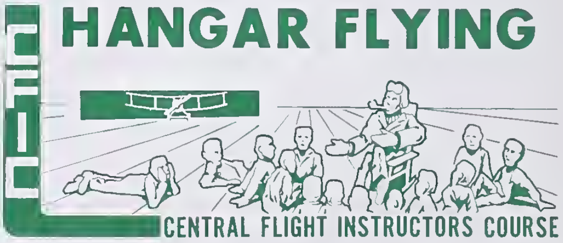
Don't bend to pressure or sign off anything for expediency that has not been accomplished. Be sure your students get the benefit of your experience in every maneuver. The one you sign off without accomplishing may be the one that causes a major accident. Pressure can be applied to make it seem reasonable to overlook part of a checkout program. Don't do it. Remember your responsibilities. Your commander is depending on you to turn out a finished safe product. Don't give him less than that.

We know as well as you that an instructor cannot solve all the motivation problems that we encounter. Some of the problems, such as TDY separations from the family, delays in upgrading and alert schedules, are not solvable by the instructor. However, with these problems already present, it makes it that much more important for the instructor to really work at motivating the student. How do we do it? Complain continuously about alert, unfair evaluators and airline pilot salaries; make sure the student knows that you are not interested in his progress and that you know nothing about his previous activity. Also make sure your students know the aircraft is old and unsafe and that they will be crewmembers for the rest of their career; ridicule frequently and make the student wonder how you can know so little and still be an instructor. How many times have you seen or heard this approach? If you ever do, put a stop to it. Your students deserve better than that, and you can make sure they get it. Remember, they are trying their best to learn to fly and do a good job. If your students are not making progress, take a look in the mirror and you will get a chance to see the reason they are not doing better. You probably have failed. We have seen grade sheets start from "excellent" in the first flight to "unsatisfactory" in four or five. Nice work. In only a short period of time you brought your students all the way to "unqualified." We will spot you one thing, they really would like to do a good job, if for no other reason than to get you off their back. They are trying their best, are you?

Prior planning helps you and your students to achieve the best results. Let them know what the plan is and stick by it. If they know what you are planning to do and what you expect of them they will do it better. They really have a right to know since they are the reason you are flying in the first place. Besides, they are the ones who get evaluated. Give them a chance. Brief them and critique them. They deserve it. Honesty is also important. Don't con your students. They know when they did well and when they did poorly. Don't lie to them. It is no sin to make a mistake or simply not know. More important than telling your students what they did wrong is telling them how to do it right and why they did it wrong. We have heard such statements as "That was a bad landing." Your student knew it was going to be a bad landing a long time before you did. What that pilot wants to say is, "No kidding, IP, really? How observant of you." The results are obvious; it's up to you to identify the errors and prevent their recurrence. A good instructor cannot only tell students why they did something wrong, but can prevent them from doing it in the first place. Brief them on what they are going to do and how they should do it to achieve good results. If they still have problems, try a different approach.

Along with your responsibilities to the unit, there are responsibilities of your unit to you. Your unit must remember that you are trying to help them and safety is an integral part of your plan. In order to effectively accomplish your duties, your duties must have unit support. You must make your needs known and the unit must do its best to support them. The biggest key to the success of your program is adequate and timely scheduling. This will allow you the best utilization of available time and aircraft. One last thought; you must stay current. You are the one that must demonstrate and you are the one who may have to recover, so never exceed your own limitations.

Your ability to turn out a safe finished product is the key to safety. You can and should provide the future direction of this command. SAC needs your experience, knowledge, and skills. Make your ideas known. Work closely with CEVG and standardization. Improve yourself so that you can be the best instructor you are capable of being. Be knowledgeable, know the regulations and manuals, and for heavens' sake, know the Dash One. Be a salesman, sell yourself, your plane, our command. The challenge is there; it's up to you to accept it.



ACE TOPICS

COLD WEATHER. As the cold weather season approaches, it will be increasingly difficult to force ourselves to spend enough time in the cold and wind to do a proper preflight. Ice can cause problems with several important systems on the T-38. The aircraft should be completely free of ice prior to flight. Ice on the fuselage, wings, vertical tail or flight control surfaces degrades the aerodynamic characteristics of the aircraft. Ice in wheel wells or the speed brake cavity can damage hydraulic lines, electrical wiring or switches. In fact, a large accumulation of ice can mechanically block movement of hydraulic components. Inside the cockpit, check for water or ice on the floor. If present on the floor, it could also be in the stick well where it could freeze in flight and prevent or limit stick movement. Be sure that canopies and windscreens are free of ice or frost. Appropriate clothing helps ward off the chill during your preflight and could become even more important if you are faced with a survival situation. These actions will help prepare you and your trusty bird for cold weather operation.

HELPFUL HINT. The Air Force Civil Engineering Center has teams which travel around doing what they call "Runway skid resistance surveys." What they do, in a nutshell, is dump a large quantity of water on the runway and then measure the coefficient of friction at various time intervals. This gives a profile of the runway which can show spots where skidding or hydroplaning may be most likely to occur.

These surveys are primarily used by base civil engineers to indicate when rubber buildup in the touchdown zone needs to be removed or when a low spot is forming which won't drain. Now this is all great, but what direct use can a pilot make of these reports? We all know the ends of the runways are slicker because of rubber and oil deposits, but one piece of information which you may not be aware of is presented here.

A survey of reports from 10 bases, or about 20 runways, revealed that all the graphs told roughly the same story. Some runways were slicker than others but the common element was that 15 to 20 minutes after the application of water, the runway regained the majority of its braking efficiency. This little bit of information gives a new planning factor. If fuel is available delay landing for 15 or 20 minutes after a rainshower dumps on the base. You will be pretty sure of avoiding most of the problems associated with skidding and hydroplaning. Same goes for takeoff, wait awhile. Of course, it might not be necessary all the time, but if faced with a short runway and/or strong crosswinds, you will want the odds in your favor.

BOMB/NAV CHANGES KEY TO B-52 UPDATE

BENJAMIN M. ELSON

EDITOR'S NOTE: EXCERPTS REPRINTED FROM AN ARTICLE BY BENJAMIN M. ELSON BY PERMISSION OF AVIATION WEEK & SPACE TECHNOLOGY MAGAZINE

Full-scale development of the first significant modification of the USAF/Boeing B-52 bombing and navigation system since the strategic bomber went into production is under way with a view toward establishing an initial operational capability for the new system in December, 1982.

The development of the offensive avionics system will proceed in parallel with the development of an underwing missile carriage and the electronics for integrating the missiles with the aircraft.

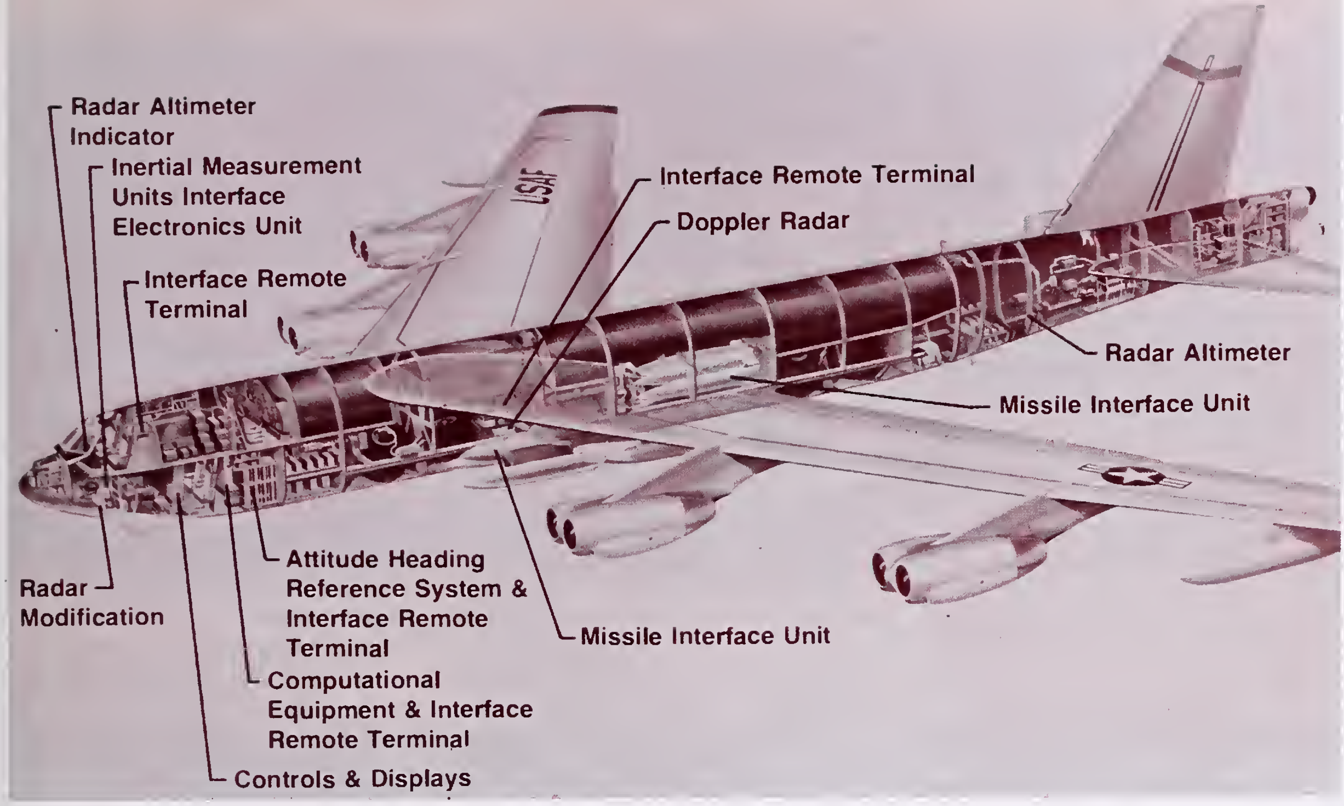
The missile carriage is a pylon capable of carrying six air-launched cruise missiles and short-range attack missiles (SRAM) interchangeably.

The three modifications are scheduled to be installed in the fleet simultaneously. Kit proofing of the first aircraft is due for completion in June 1981.

The development of a new offensive avionics system was driven by the increasing difficulty and expense of operating and maintaining the B-52G/H's 1950-vintage equipment, for which some parts no longer are in production.

The new system is expected to increase mission reliability by about 25%, and the mean-time-between-failures (MTBF) by a factor of three. Furthermore, it should reduce the cost of operating the B-52G/H fleet by about $65 million yearly, according to A. M. S. Goo, vice president for military systems development and management at the Boeing Wichita Co. "We're going to get a net weight reduction of about 1,800 lb. on the B-52G, and 1,900 lb. on the B-52H," he said. "This weight reduction means that we'll save nearly 2 million gallons of fuel annually."

While cost and supportability have provided the motivation in this program, performance also has been a factor, Goo pointed out. The new systems will permit navigation with increased precision, and should reduce the circular error probability of the bomber's missile payload by 30-35%. Follow-on developments are expected to reduce the missile and bomb error probabilities an additional 20% and 40%, respectively, and further raise mission and equipment reliability, Boeing analyses indicate. This second phase of the offensive avionics upgrade program is intended to meet Strategic Air Command's requirement for accuracies needed to operate against hard targets. In addition, it will automate


Radar Altimeter Indicator
Inertial Measurement Units Interface Electronics Unit
Interface Remote Terminal
USAF
Interface Remote Terminal
Doppler Radar
Radar Altimeter
Missile Interface Unit
Radar Modification
Attitude Heading Reference System & Interface Remote Terminal
Computational Equipment & Interface Remote Terminal
Controls & Displays
Missile Interface Unit

USAF/Boeing B-52 drawing shows the location of the projected cruise missile carrier and major elements of the new offensive avionics system being installed in late-model B-52 aircraft. Note the location of the missile carriage between the inboard engines and the fuselage.

and integrate operations sufficiently to permit the size of B-52 flight crew to be reduced from six to five.

Systems Analyzed

Boeing has analyzed the probable success of bomb/nav systems of various accuracies against the estimated present and future hardness of potential strategic targets. Phase 1 of the offensive avionics upgrade will take care of part of the problem of increasing target hardness "as a freebie," but Phase 2 additions and modifications will be needed to really get back to present capabilities if target hardness increases as expected in the future, Goo said.

Boeing's work on offensive systems is part of a broad effort to upgrade the aircraft for the enlarged role into which it was cast by President Jimmy Carter's decision last year not to put the Rockwell International B-1 bomber into production. The company also is engaged in a continuing effort to improve the bomber's defensive systems against current and projected threats. Possible use of winglets and/or gloves is being considered as means of extending the aircraft's range.

Boeing analysts expect modifications necessitated by the cruise missile integration program to have more of an impact on operating stress levels than other planned systems modifications. Local structural modifications are planned as a part of this work to provide the additional strength needed for the new loads. An effective structural maintenance program could extend the B-52's useful life to the year 2000, specialists here predict.

Changes in usage may affect structural service life and maintenance programs far more than systems modifications. For example, increases in low-level speed, or the number of hours flown per year at low level, would be expected to have more serious impact than the systems changes per se. Durability and damage tolerance analyses will have to be completed before Boeing can quantify the effects that the planned modifications will have on the economic life of the B-52's structure and the maintenance necessary to retain structural integrity.

The new offensive avionics will be a digital system, with improved sensors interconnected to digital computers by means of a dual MIL-STD/1553A data bus. A tape cassette data entry unit will be provided to store programs for the computers. New controls and displays will be provided, and these will be further modified and integrated for one-man operation during the second phase of the program.

The package of new sensors includes the Honeywell AN/ASN-131 SPN-GEANS standard precision navigation system, Doppler radar, radar altimeter and attitude and heading reference system. The ASN-131 is one of two USAF standard systems being provided. The other is the hardened common Doppler radar (furnished by Teledyne Ryan).

Reliability Modifications

In addition to the new sensors, reliability modifications are being incorporated into the existing bomb/nav system radars — primarily in the receiver-transmitter and modulator section. The B-52G radar is the AN/ASB-16, and the B-52H radar, the AN/ASB-9A.

Included in Phase 2 of the offensive avionics system are a second radar altimeter, new forward looking and synthetic aperture and radars, radar processor, automatic flight controls — including flight deck controls and displays — and the integrated controls and displays for one-man operation of the bomb/nav system. The new radar functions could be provided by the Westinghouse electronically agile radar (EAR), soon to be tested on a B-52. Elements of the offensive avionics in the missile launch chain will be designed to provide the B-52 with a nuclear hardened missile launch capability. Wire runs and components such as the computers, data buses, controls, displays and missile interface units are to be completely hardened to specified levels.

The wing-mounted missile pylons, like the eight-missile rotary launcher that fits within the B-52 bomb bay, is being designed to accommodate the USAF/Boeing AGM-69A SRAM and either the Boeing or General Dynamics air-launched cruise missile interchangeably. Interoperability requires that the pylons and rotary launcher be able to carry, establish launch parameters, monitor and launch either missile with the same set of electronic equipment. The pylons are being designed to fit under the wing between the inboard engines and the fuselage, in the same location where the SRAM mounts currently are attached. The new pylon is much longer than the SRAM mount because of the greater length of the cruise missiles.

The pylons can be jettisoned after their weapons are launched to clean up the aerodynamics.

Interoperability will not be required for the Boeing/General Dynamics cruise missile flyoff, because the offensive avionics system is needed for interoperability, and will not be available in time for the flyoff. The pylons used in the flyoff, however, will be fully wired and mechanically capable of accepting either missile.

The question of how many aircraft will be equipped with cruise missiles cannot readily be answered now, Goo said. "It used to be — when they first announced the cruise missiles — they were talking about using the B-52Gs in the stand-off mode. They'd fly missions off the Soviet coastline and launch their cruise missiles, which would hit their landfall checkpoints and buzz off to their prescribed maps. It was intended to carry quite a few cruise missiles per airplane.

"About that time, some SALT (strategic arms limitations talk) discussions came along regarding range, regarding numbers you could carry in an airplane and regarding the inclusion of these cruise-missile-carrying airplanes in the MIRV [multiple independently-targeted re-entry vehicles] limits. The Vladivostok agreement called for 2,400 strategic delivery vehicles and 1,320 MIRVs. If the cruise missiles were counted in the MIRV limits, someone had to give up something (an element of the strategic triad) . . . and when you ran the counts, you could count only 120 (B-52Gs allowed to carry cruise missiles)."

This dilemma gave rise to the shoot-and-penetrate concept, Goo said. If this concept is applied, an aircraft would carry its cruise missiles externally, and SRAM and lay-down bombs internally. It would launch the cruise missiles at the prescribed launch point, and then penetrate the Soviet landmass in a conventional manner.

The pylons and the offensive avionics system will work with either the B-52G or B-52H, although so far, only the B-52G has been identified as a cruise missile carrier. Whether the Air Force puts cruise missiles on the B-52H is something they have to decide, but under the shoot-and-penetrate concept, it's possible for them to do so, Goo said.

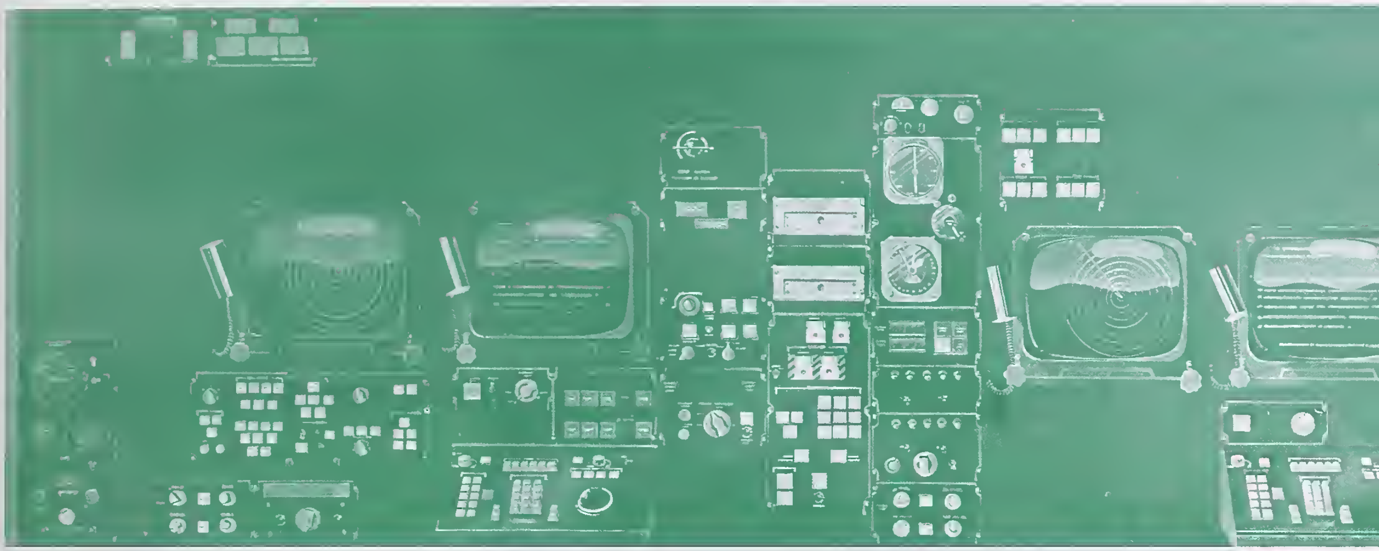
Upgrading the B-52's defensive capabilities through electronic countermeasures and related systems has been a continuing evolutionary process for the past two decades. For example, the G and H models are in the third year of a five-fiscal-year program to outfit them with smart-noise operating equipment designed to counter the Tupolev Tu-126, the Soviet Union's airborne warning and control system, code-named Moss by the North Atlantic Treaty Organization. Motorola and Boeing are associate contractors on this program, Boeing providing the fixed, or Group A equipment under contract to the Air Logistics Command, and Motorola providing the Group B black boxes under contract to the Aeronautical System Div. of the Air Force Systems Command.

The major production-oriented ECM developments that Boeing is working on — the so-called Phase 7 program — includes the following items:

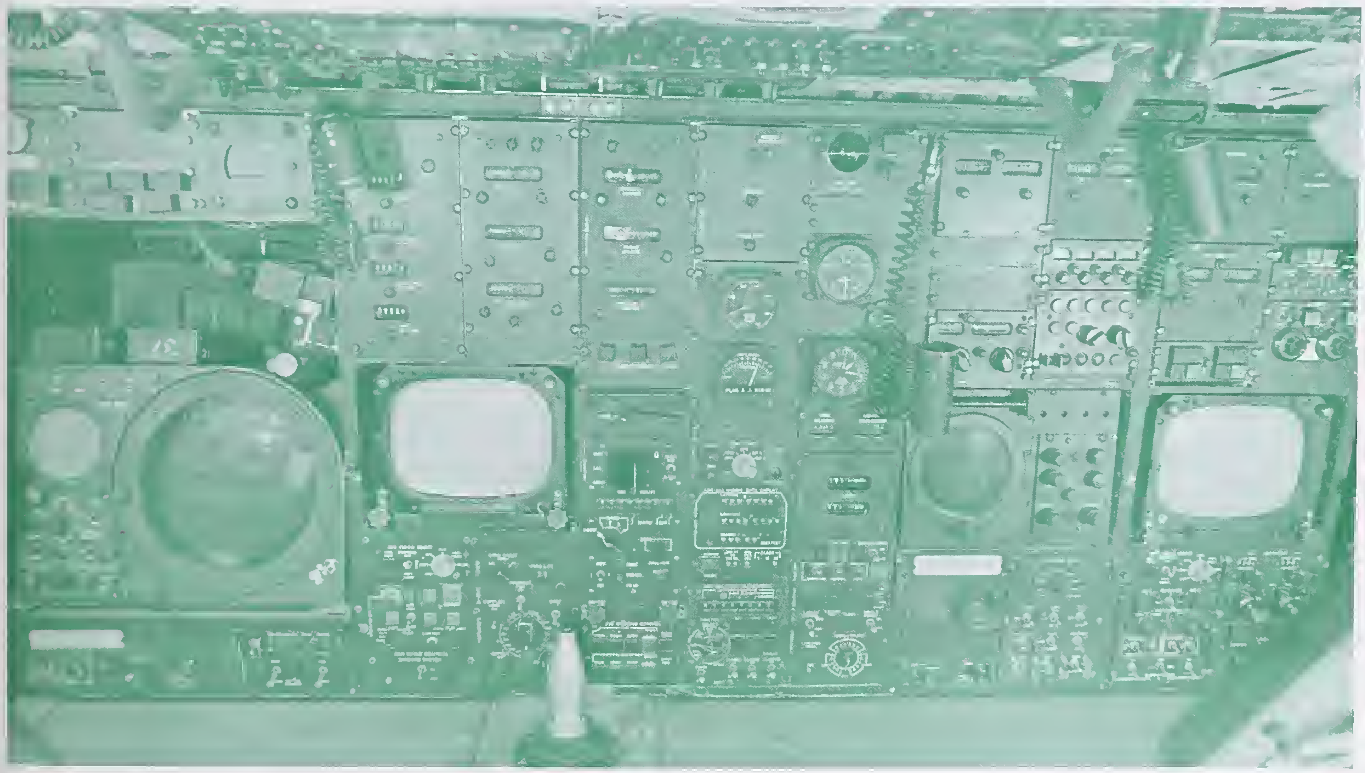
- Power management system, which provides set-on receivers to control the Northrop Defense Systems Div. AN/ALT-28 jamming transmitters. Boeing is providing the Group A equipment, and Northrop, the Group B.

- ECM transmitter update program, which adds two AN/ALT-28 transmitters in the tail of the B-52 to supplement the coverage of the eight already installed in the lower fuselage at the front of the aircraft. The power management system will be applied to both the new and existing transmitters.

- Doppler radar tail warning system with Westinghouse and AIL Div. of Cutler Hammer competing for the hardware award. The same system is



New controls and displays are to be installed in the B-52G/H forward navigator's operational console. The four multifunction displays seen in the above rendition can be used to monitor status, verify data entry and display radar and other sensor data, route information, and weapon status. Integrated data entry keyboards are located below two of the displays, and controls for weapons, radar, the electro-visual system and other subsystems are in the center. Photo below shows the current console.



scheduled to be used on the USAF/McDonnell Douglas F-15.

Omni-Directional Antennas

The ALT-28 transmitters emit their jamming signals through omni-directional antennas that disperse energy inefficiently. To increase the effective radiated power and put more jamming energy on the threat, Boeing is working with USAF to develop an electronically steerable antenna system, a highly directional phased array that would replace the omni-directional radiators. Boeing finished the configuration definition phase of this program in June, and is working with the Air Force to develop a prototype program. The company hopes to be under contract for the full-scale development phase of the program by February, according to David B. Marshall, Boeing's defensive systems program manager.

The concept selected for full-scale development locates the phased array on a single pallet under the forward fuselage. Other alternatives that were analyzed included antennas

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in the wings and the use of split pallets under the fuselage. The objective was to achieve optimum electromagnetic performance while minimizing the drag and range penalties on the aircraft, Marshall said. Boeing's associate in the electronically steerable antenna system program is Sedco Systems, Inc., of Melville, N.Y.

Beyond this work, Boeing is supporting some current studies by Strategic Air Command and Aeronautical Systems Div. to look at the post-1985 requirements and threats, and identify some candidate architectures for integrated systems to counter those threats, Marshall said. The Systems Program Office intends in Fiscal 1979 to look at some candidate architectures and develop some cost, schedule, and technical performance effectiveness data for the various architectures. It then will select one architecture for a major update on the B-52G/H. Boeing is working with the Systems Program Office now to initiate a study to develop the data necessary to make such a decision.

Phase 7 Configuration

The baseline for the advance defensive system would be the Phase 7 configuration, which comprises 19 sensors, 5 processors, 17 jammers, flares, chaff, and either 0.50 caliber or 20-mm. guns. Alternate configurations being considered for this upgrade include various additions to the Phase 7 system.

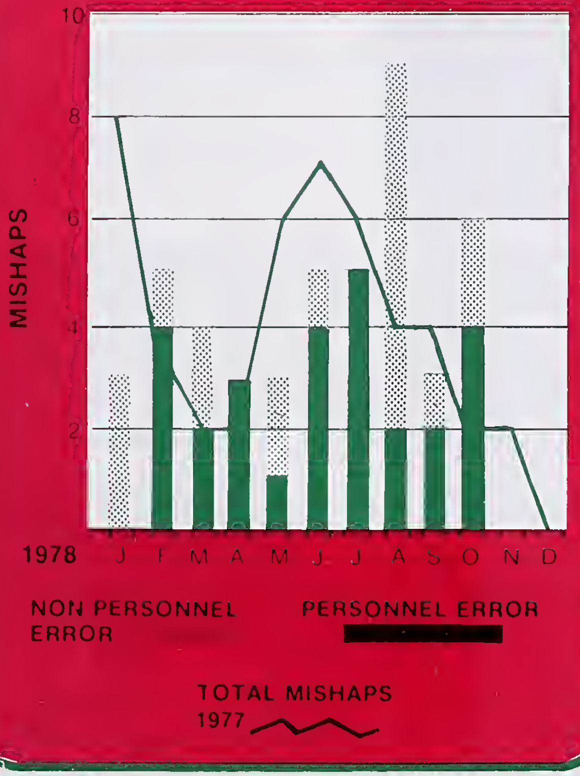
Among the systems and functions being considered are:

- Compass See continuous-wave processing feature added to the existing Dalmo-Victor AN/ALR-46 radar warning receiver (bands C-J).
- A-B band communications and data link countermeasures sets.
- Identification, friend or foe (IFF) C-band countermeasures set.
- Electronically steerable antenna system phased array antenna.
- Monopulse jamming capability added to the ALT-28 transmitters in the I-J bands.
- Electro - optical countermeasures.
- New fire control system for the 20-mm. gun and short-range bomber defense missile.
- Integrated controls and displays.
- ALQ-( ) new countermeasures system for bands D-H.
- ALQ-161 countermeasures equipment, developed by AIL for the B-1 bomber — possibly in an extended bandwidth version.

Production of the Phase 1 offensive avionics upgrade systems is due to get under way in 1979 and continue through late 1986. A production rate of six per month is projected after completing the first aircraft installation and checkout. Goo predicted that USAF might handle the installation of the offensive avionics and cruise missile integration on a wing-by-wing base installation — the way SRAM was incorporated into the wings — rather than wait for all the aircraft to cycle through the quadrennial depot maintenance cycle.

Missile Mishap Report

DOD CLASS A, B and C



SHORT-CIRCUITED SRAM — During a level-1 checkout of an AGM-69A missile, a cam lock fastener failed, allowing the fastener to fall onto the top of the missile, contacting the E-1 positive connection and the side of the battery case. When power was applied, a short occurred resulting in damage to the battery case and the P-3 connector of the wire harness assembly.

The material failure of the cam lock fastener alone would not have caused this mishap, but when combined with the maintenance team failing to comply with their checklist, damage of $2700.00 resulted. The checklist item the team overlooked was the installation of the outer shell of the missile during level-1 checkout. Correct use of tech data at all times will prevent mishaps and save resources.

TRACTOR TO TRAILER FIFTH WHEEL SEPARATION — A Minuteman III missile was being transported from an LF to its support base. Several 90-degree turns and a railroad crossing were negotiated without difficulty. The vehicle stopped for another railroad crossing on a U.S. highway; when it proceeded forward, the fifth wheel separated from the trailer king pin. The fifth wheel slid forward under the trailer until the weight of the trailer caused the fifth wheel to crush through the bottom of the trailer.

The tractor was connected to the transporter-erector trailer at the LF and the fifth wheel was visually checked to insure that it was a positive lock. All indications revealed it was locked. The position of the fifth wheel release handle was in the "release" position after the mishap. The stop rod on the front of the fifth wheel was in "release" position. The fifth wheel appeared to be fully locked by visual check, but in fact, could have been only partially locked.

Investigation revealed that when the tractor was mated with the trailer visual inspection satisfied the operator that the fifth wheel had a positive lock. Although several turns and stops were made prior to separation, the lock jaws were open after the incident. Evidently the lock was not fully seated even though the visual inspection dial did not indicate an unlocked condition. Subsequent inspection of the fifth wheel revealed the safety latch was frozen in the unlocked position. New procedures for connecting the tractor to the trailer are being published; however, they cannot replace the need for maintenance inspection of the fifth wheel components and operator verification of correct locking action.

WEATHER CONTRIBUTED SRAM MISHAP — Inspection of a SRAM launcher prior to download from an alert aircraft resulted in finding damage to one fin, one fuze, and nose section. ADU-317E adapter had contacted the launcher return tube and the missile during the uploading of the launcher. Personnel error in aligning the MHU-123M and other launcher misalignments were listed cause factors. Other possible causes contributing to this mishap were cold weather, hours of darkness, and accumulations of ice and snow which precluded level trailer positioning. Since winter comes early to our northern tier bases, it is not too early to prepare for the upcoming winter maintenance operations. Many mishaps can be prevented if personnel have ice and snow-free surfaces to work on.

1978 SAC SAFETY SEMINAR...

Brig Gen Garry A. Willard, Jr., (left) addresses the 1978 Safety Seminar attendees on opening day. (Far left) Brig Gen Patrick J. Halloran, SAC Inspector General, closed the seminar by emphasizing that good communication is necessary in operating effective safety programs.

CONTINUED FROM PAGE 7

eral Garry A. Willard, Jr., Director of Aerospace Safety for the Air Force Inspection and Safety Center (AFISC), Norton AFB. In his address, General Willard pointed out that the wing commander is the Chief of Safety for his unit and the job of his safety people is to assist him in assuring his safety program is effective. In accomplishing this task safety people have to get out and meet the people and help them with their safety problems.

On the subject of ground safety, General Willard stressed that motorcycle mishaps are a continuing problem throughout the Air Force. The Air Force has the best traffic safety program in the world, but for effective traffic safety education, safety people need to be better at talking to and caring for people.

In the area of aircraft mishaps the Air Force is not having a good year. SAC, however, is having a good year. The recent loss of a B-52 is the first Class A mishap this year in SAC and the first loss of a B-52 in 17 months.

General Willard emphasized that all safety people need to look closely at aircraft procedures and techniques as well as the sorties the crews fly. There is a need to insure the crews are flying the right type of sorties.

On the subject of safety manning, General Willard pointed out that safety is a great business. With the reduction of about 300 Air Force safety manpower slots comes an increased challenge to get the job done.

In his concluding remarks, General Willard emphasized that the number one problem in the Air Force today is retention — retention of everybody. This problem affects safety through instability, retraining and lower experience levels. Safety people must assist their commanders in handling this and other problems. The Chief of Safety at each unit should be the right arm of his commander. We need quality people in safety.

The attendees represented over 40 SAC units, the HQ Air Force Reserve, Directorate of Nuclear Surety and the Air Force Inspection and Safety Center. Representatives from HQ SAC Director of Safety and the NAFs were responsible for the seminar agendas. The 4235 Strategic Training Squadron was the host organization for the three-day seminar.

Safety people had an opportunity to discuss with higher headquarters representatives problems faced in day to day operations. Some major problem areas discussed were AFR 127-4 mishap reporting, reducing unnecessary reports where possible, private and government vehicle mishap reduction, improving the Personnel Reliability Program, improving missile safety education programs, communications in programs, IG cross-feed problems, and midair collision prevention programs.

One of the highlights of the Ground Safety seminars was a presentation by Dr. Alan R. Robinson, head of the education division of the Motorcycle Safety Foundation. He summarized the history of motorcycle mishaps in both the U.S. and the Air Force. He also outlined a general program for motorcycle safety and

BIG INSTRUMENT

QUESTIONS AND ANSWERS

Capt Tome H. Walters, Jr
1st CEVG, Barksdale AFB

QUESTIONS

1. On a stopover flight plan, what are the first two entries in the route of flight for the second leg?

2. You are enroute to the IAF for a published penetration and approach. RAPCON advises "Radar contact" and clears you for the approach.

a. Do you call departing the IAF?

b. Do you call departing your altitude?

3. You are on radar vectors to an ILS at 3400 feet. Published glide slope intercept altitude is 3000 feet. The controller clears you for the approach and you depart 3400 when the CDI comes off the wall. Is a radio call required?

4. After starting descent for a PAR approach, the controller advises a new altimeter setting. Must you read it back?

5. If visual contact with the ground is made before an approach is completed, the complete approach procedure will be followed unless ________.

6. According to AFR 60-16, a Standard Formation Flight has all aircraft positioned within ________ horizontally and ________ *vertically.*

a. SAC aircraft in trail at one mile and 500 feet are in standard/nonstandard formation?

7. During nonstandard formation flights, all aircraft squawk ________ unless otherwise directed by the controlling agency.

8. SAC Sup 1 to AFR 60-16 directs SAC aircraft to land in the designated touchdown zone of the runway. What's that?

a. For a touch-and-go landing, the B-52, FB-111, and KC-135 must land within the ________.

9. Do not turn aircraft after takeoff until ________.

10. Aircrew members must not take part in an aerial flight within (1) ________ hours of SCUBA diving, surface supplied diving, or recompression chamber exposure and (2) within ________ hours after altitude chamber flights to 30,000 feet.

Continued on next page

BIG INSTRUMENT

ANSWERS

1. The proposed departure time and departure location. Example: P 1800 BAD (if you were estimating off at Barksdale at 1800).

2. a. No. You are not required to call departing a fix in radar contact.

b. Yes. When cleared for an approach you must call departing an assigned altitude.

3. Yes. Call departing the altitude, as above.

4. No. FLIP General Planning (GP), paragraph 5-25d, says this is the one exception to the general rule of reading back altimeter settings to Approach Control Agencies.

5. The pilot receives approval for a VFR approach. FLIP GP, paragraph 5-34.

6. One mile and 100 feet.

a. Nonstandard. Reference 60-16, chapter 5, and FLIP GP, paragraph 5-15.

7. The appropriate code. This is a change from past procedures. SACM 100-24, Volume 5, still states the old procedure. AFR 60-16 takes precedence and 100-24 will be changed to agree.

8. The first 3000 feet, beginning at the threshold, according to FLIP GP, chapter 2.

a. First third of the runway. A slight difference from the full stop criteria noted above.

9. Past the departure end at a safe airspeed and altitude. You can turn earlier (with safe altitude and airspeed) if safety dictates otherwise, or required by local procedures, or tower clears you. Reference AFR 60-16, paragraph 5-8.

10. Twenty-four hours and 12 hours. The time limit for altitude chamber flights is new. Reference AFR 60-1.

Some type of grading scale is always added at the end of a quiz like this. Want to know how well you did? Here's our scale.

Number Right	*Grade*
0-5	*Flies by NOTAM only.*
6-8	*50-50 bet on your next check.*
9-10	*Keep it to yourself. No one can tolerate an overachiever.*

how it could be used to the Air Force unit's advantage.

Brigadier General Patrick J. Halloran, SAC Inspector General, was the principal speaker during the closing session. In his talk, he emphasized that the strong support of the wing commander is required if the wing's safety program is to be effective. Safety people must handle the difficult job of salesmanship to their commanders.

General Halloran pointed out that most safety problems in the field are the direct result of a lack of communication. To have a good safety program, safety people must keep the lines of communication open with their commanders, higher headquarters and more importantly with everyone on the base.

In regard to ORI inspections, General Halloran reminded everyone that the entire IG team acts as safety inspectors. If units are complying daily with the regulations they shouldn't have problems passing the ORI. There is something wrong with the safety program if things have to be done differently during an inspection.

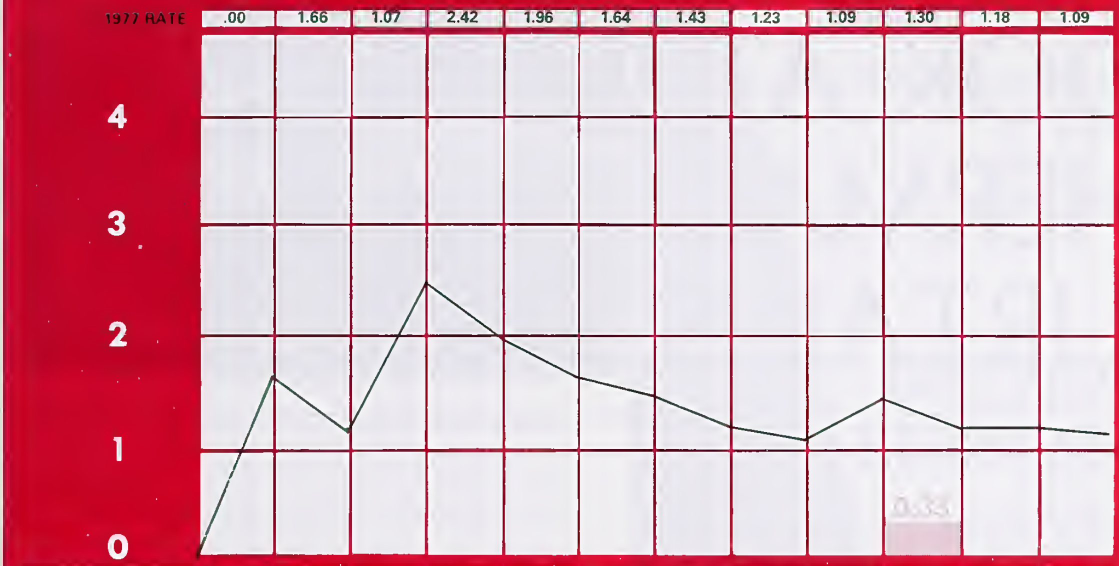
In concluding his remarks, General Halloran reminded the safety people that he or the Deputy IG would be personally visiting base safety offices during CINCSAC's base visits. This is an opportunity for safety officers to let headquarters know first-hand what problems exist.

Col Miller summarized the three days in his closing remarks by saying he was very pleased with the speakers and the interchange of ideas which added validity to the seminar. He also reiterated that for a safety program to operate effectively, the amount of time-consuming paperwork needs to be reduced. He emphasized that the SAC Headquarters staff would study ways to reduce the paperwork required in the reporting process.

Col Miller then echoed the feeling of all attendees in expressing his appreciation to the 4235 STS for their work in hosting the 1978 SAC Safety Seminar. A good show all around.

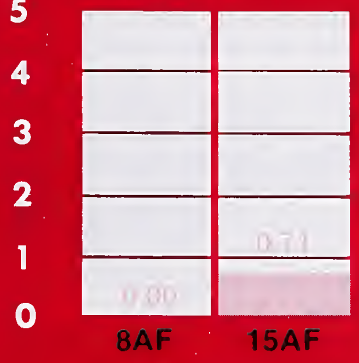
1978 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1977	0	1	0	2	0	0	0	0	0	1	0	0
1978	0	0	0	0	0	0	0	0	0	1	0	

1978 SUBORDINATE CMD RATES

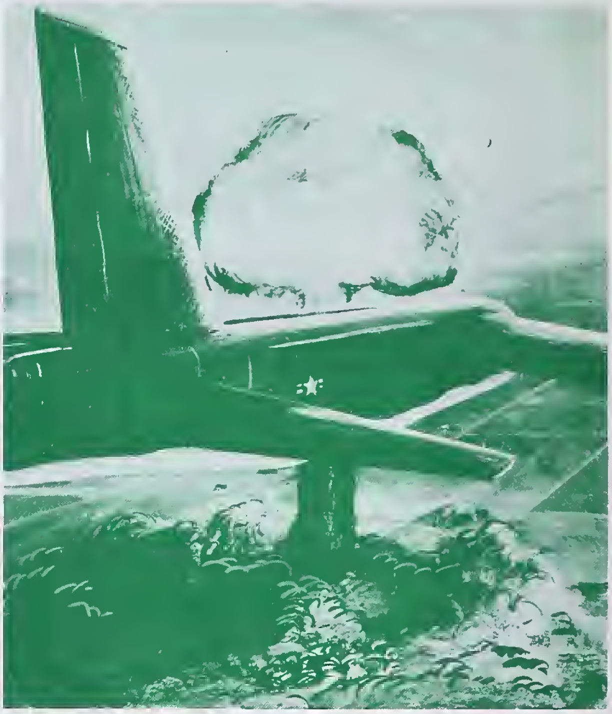


LEGEND — 1977 RATE

MISHAP STATUS

B-52D	OCT 78

A CLOSER LOOK AT THERMAL CURTAINS



Lt Col R. P. Patrick
CMS E. P. Yingst
HQ SAC/LGME, Offutt AFB

Lt R. Grau
AF Wpns Laboratory
Kirtland AFB

A project recently completed by the SAC Aircraft Engineering Division (LGME) included the evaluation of the protective capability of thermal curtains in a nuclear thermal environment. The results of the test will be used to evaluate present maintenance and inspection requirements.

SAC aircraft engaged in strategic missions could be exposed to thermal environments resulting from detonations of nuclear weapons. These environments could cause severe burns to the skin and retina of exposed crewmembers, as well as flash blindness. They could also ignite combustible materials in the cockpit resulting in smoke, fumes, and open fires in the immediate vicinity of the aircrew. To prevent these potentially serious incidents, thermal curtains were installed to block out the nuclear thermal environments. The curtains are constructed of a fiberglass fabric with a highly reflective aluminum facing and a silicon rubber back. The aluminized surface reflects the majority of the thermal energy while the rubber backing acts as a heat sink to soak up the small fraction of energy not reflected.

A recent test of a thermal curtain mounted behind a KC-135A window was conducted by the AF Weapons Laboratory at the Solar Furnace Facility of the White Sands Missile Range. The test objectives were to determine the protective capability of new curtains and the degradation caused by deterioration such as holes, abrasions of the aluminized surface and the rubber backing, repaired areas, and creases in the curtain. Also evaluated were the degradation caused by hydraulic oil smears and grease pencil marks on the aluminized surface. In addition, tests were made on a curtain which had been condemned several years ago and used as a training aid; and a pilot's curtain with a peep-hole covered by a flap secured with velcro was tested to determine whether the velcro would withstand the thermal loadings.

The results of the tests are shown in table 1. To put the numbers in the table in context, please note that thermal levels of about three to five calories per square centimeter would cause rather painful first degree burns to exposed skin and 10 to 15 calories per square centimeter would ignite paper and cause leather or vinyl to smolder. Therefore, the data show that the thermal curtains presently in use on SAC aircraft inherently provide excellent protection. Only those defects in the shiny outer surface of the curtain showed significant reductions in protective capability. Even the condemned curtain used for training purposes withstood quite high thermal energies and the velcro still functioned normally after exposure.

TEST RESULTS — Protective Capability of Thermal Curtains	
New Curtain	120+ calories/centimeter^2
Pin Holes (1mm diameter)	90+
Rubber Back Abraded	90+
Hydraulic Oil Contamination	90+
Repairs	90+
Velcro Fastening	90+
Condemned Training Curtain	90+
Shiny Surface Degraded (Grease Pencil Marks and Aluminum Surface Abrasions)	Charred and Smoked at 90 calories/centimeters

The test results suggest that some of the maintenance and inspection criteria and in particular the heavy emphasis upon overly strict compliance with these criteria could be relaxed. An evaluation is now in progress and recommended changes will be prepared in the near future.

A word of warning, however, is in order. A good light seal is still essential. The curtains will not help if they are not installed and fitted properly. Significant direct light leaks must be avoided. If properly fitted, curtains with no obvious blemish or scrape of the aluminum coating should provide more than adequate protection to the aircrew.

REALLY GOTTA HAND IT TO THOSE ENGINEERING WEENIES. THESE CURTAINS REALLY DO THE TRICK.

NATIONAL SAFETY COUNCIL AWARDS

AWARD OF HONOR

55 Strategic Reconnaissance Wing
301 Air Refueling Wing
351 Strategic Missile Wing

AWARD OF MERIT

3900 Computer Services Squadron
341 Strategic Missile Wing
22 Bombardment Wing
42 Bombardment Wing
68 Bombardment Wing
92 Bombardment Wing

CERTIFICATE OF COMMENDATION

3901 Strategic Missile Eval Sqd
390 Strategic Missile Wing

PRESIDENT'S AWARD LETTER

Det 3, 1 CEVG
Det 8, 1 CEVG
Det 9, 1 CEVG
Det 24, 1 CEVG
4201 Test Squadron
4200 Test and Evaluation Squadron
4235 Instructional Systems Development Sqd.

PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence outlined in SACR 127-2.

FLYING CREW

On a recent night training mission, Crew R-55 of the 7th BMW experienced an engine fire on the number four pod. The lack of any fire indications in the cockpit and severe vibration from the number eight engine compounded their problem initially. They began Dash One procedures for the engine fire and shut down number eight engine. The fire continued unabated with flames leaping up to the leading edge of the wing. The number seven engine was shut down but the fire continued to burn. At this time the radar navigator and navigator coordinated a flight plan direct to home station, obtained clearance for descent and handled all other communication with ARTCC. The pilot continued accomplishing the expanded Dash One engine fire procedures. At this point the flames began to subside and subsequently went out. Upon arrival, they delayed at altitude to reduce gross weight and complete six-engine landing data and descent checklists. The approach was flown with the EWO reading the checklist so that both pilots could devote their full attention to flying the aircraft. The precision approach (backed up with airborne radar) and the landing was uneventful. This crew's indepth knowledge of collateral crew duties and their professional ability to work as a team under the most adverse conditions resulted in the safe recovery of both aircraft and crew.

Crew R-55, 7th Bomb Wing, 9th BMS, Carswell AFB includes: P Capt Michael L. Smith, CP 1Lt Michael F. Belcher, RN Capt James R. Hobbs, N Capt David E. Williams, EWO Capt Jerry D. McEntire, and G Sgt Terry F. Cox.

Crew S-153, 341st SMW, Malmstrom AFB: MCCC Capt William S. Daugherty, and DMCCC 1Lt Michael L. Veres.

MINUTEMAN

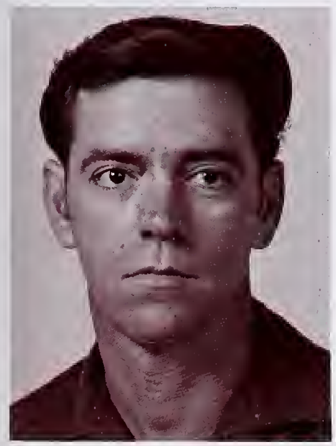
On alert at the squadron command post launch control center, Crew S-153 from the 341st SMW demonstrated professionalism in their response to an emergency involving personal injury. This situation occurred during a particularly busy alert involving numerous maintenance activities. Already working to the maximum of their capabilities, the crew was notified that a member of a Geodetic Survey team that was also working in their flight area had apparently suffered a heart attack. Requesting more details, the crew learned that the man had collapsed while in the launcher equipment room, had struck his head, and had momentarily lost consciousness. Acting quickly, the crew directed that the injured individual, who by that time had regained consciousness, be taken to the surface, be kept warm and treated for shock. Then while Lt Veres continued required operations, Capt Daugherty passed all information about the emergency to the base hospital. Based upon Capt Daugherty's detailed report, an immediate evacuation of the injured man by helicopter was made. The crew's prompt actions under harried conditions resolved a potentially tragic situation without disrupting critical missile maintenance functions.

SAFETY MAN

Capt Ronald T. Matsumura, 42d Bomb Wing Safety Officer, is named SAC Safety Man of the Month for outstanding performance and accomplishments.

Capt Matsumura was assigned to the position of supply ground safety officer following that unit's marginal rating for program management. Subsequent followup inspections revealed an increased safety awareness and compliance by unit personnel with lasting corrective actions to deficiencies being implemented. During 1978, no management deficiencies were noted and unit procedures for safety program management were considered outstanding compared to other base units.

Capt Matsumura's safety responsibilities encompass over 300 personnel, 24 buildings and 70 vehicles of which many are involved with distribution of flammables and flight line/aircraft operations. The unit operation is vast and varied, however through constant monitoring and the quarterly analysis of problem areas, Capt Matsumura continues to make recommendations and maintain a low mishap experience rate for his unit. His continued review of safety directives to insure compliance, his attention to detail, and his outstanding desire and motivation to excel in his performance of safety duties is a definite factor in the acceleration from a marginal rating to an outstanding rating in less than one year.



MAINTENANCE MAN

TSgt Richard F. Lathrop, 68th OMS, Seymour Johnson AFB, has been selected as the Maintenance Airman of the Month. Sgt Lathrop, as B-52 phase team chief, earned this award for outstanding leadership, initiative and technical competence. His ability to motivate his team in support of the wing mission was highlighted when the SAC IG Team arrived to conduct an ORI. The phase team was working on a B-52 with all eight engines removed when the EWO generation exercise began. Working throughout the night under Sgt Lathrop's guidance, the phase team put the aircraft back into commission so that it launched less than 48 hours after exercise initiation. Sgt Lathrop is a dedicated noncommissioned officer and a valuable asset to the SAC maintenance function.

TITAN

While on alert, Crew E-083 of the 570th SMS, 390th SMW, encountered a series of complicated problems. A maintenance team, while replacing a torn flexible duct, required the chilled water system to be shut down. This caused the launch duct temperature and propellant tank pressures to rise. At this same time, thunderstorms caused the complex to lose commercial power. Power transferred normally, but without chilled water diesel overheating was inevitable. The crew decided to shut down the diesel after 15 minutes and referred to the complete facility power failure checklist. At this point, the on-site security team positioned in the control center was called to react to a security situation at another site. Without AC power, the crew was required to manually pump open the blast doors to allow the team to leave. Meanwhile, additional maintenance support arrived and was awaiting entry. The crew discovered that the outer door latch could not be opened without power. Launch duct temperature HI was lighted on the LCCFC and the utility air pressure had dropped to 50 psi. Recognizing the absolute need for AC power, the crew ingeniously decided to run the diesel a short time each hour to supply AC power to open the outer door, cool the launch duct, regain adequate utility air pressure, and recharge the batteries. The superior technical knowledge and judgment of the crew permitted the chilled water system to be repaired and the diesel returned to normal operation.

Crew E-083, 390th SMW, Davis-Monthan AFB: MCCC 1Lt Victor Wowk, DMCCC 1Lt Kenneth P. Lounsbury, MSAT SSgt James T. Dunn, and BMFT A1C Jerry E. Smith.

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SAC SAFETY SCREEN

384 AREFS, McConnell Crew E-154: FP Capt Donald R. Parchman, CPY Capt James E. Scully, CPX 1Lt Clement P. Sherer, NN 1Lt Edward F. Piatek, BO SSgt Michael L. Parsons

91 AREFS, McConnell Crew R-109: FP Capt Nicholas S. Cristiano, CP 1Lt Richard W. Roberts, NN 2Lt Stephen A. Olinghouse, BO SrA Charles L. Reigler

301 AREFW, Rickenbacker Crew E-104: P Capt James M. Anderson, CP Capt James H. Keaton, N Capt Paul L. Repak, BO SSgt Dennis M. Brown

301 AREFW, Rickenbacker Crew R-108: P Capt Jesse W. Curtis II, CP 1Lt Clyde C. Ayer, N 1Lt Robert E. Bunnell, BO SSgt Bruce W. Lawson

310 AREFS, Plattsburgh Crew R-170: AC Capt Louis L. Descoteaux, CP 1Lt Kevin W. Kozlowski, N 2Lt Gerald R. Smith, BO SSgt James M. Eden

528 BMS, Plattsburgh Crew S-28: AC Capt Lawrence T. Wade III, NB Capt William R. Craig

529 BMS, Plattsburgh Crew E-56: AC Capt Robert M. Hudson, NB Capt Roger P. Crozat

70 AREFS, Grissom Crew E-151: P Capt Kent J. Bays, CP Capt Kenneth D. Arlen, N 1Lt Eddie J. Jones, BO SSgt Steven P. Keene

305 AREFS, Grissom Crew R-132: P Capt Ray Powell, CP 1Lt Lou Arko, N Capt Chuck Riedl, BO A1C Gary Intrieri

380 AREFS, Plattsburgh Crew R-114: AC Capt Donald F. Lee, CP 1Lt George E. Walrond, NN 1Lt Richard S. Nolet, BO TSgt Jack G. Bracken Jr

60 BMS, Andersen Crew R-19: FP Capt George Houle, CP Capt William Stanford, RN Capt Thomas Kearney, N Capt Tiron Worley, EW 1Lt Larry Foreman, G SSgt David Donatto, IP Capt George Jackson, Evaluator Capt Dennis Scruggs

44 SMW, Ellsworth Crew S-052: MCCC Capt Gregory D. Cooke, DMCCC 2Lt Michael J. Taylor

90 SMW, F. E. Warren Crew E-089: MCCC Capt Jason B. Franklin, DMCCC 1Lt Raymon Martinez

91 SMW, Minot Crew R-054: MCCC 1Lt Timothy McDonald, DMCCC 2Lt Alden D. Borton

308 SMW, Little Rock Crew R-136: MCCC 1Lt Ronnie B. Kenney, DMCCC 1Lt David A. Duroure, MSAT SrA Lee H. Townsend III, MFT SSgt Arthur L. Moore

351 SMW, Whiteman Crew E-002: MCCC Capt Dennis G. Putman, DMCCC 2Lt Richard J. Lucas

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW SACR 127-2*.

★U.S. Government Printing Office
1978-665-046-10

UNIVERSITY OF FLORIDA
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HALL OF FAME

TACTICAL FLYING

OVER TWENTY-TWO YEARS

170 AREFG, McGuire (NJANG)	NONE

OVER TWENTY YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58
157 AREFG, Pease (NHANG)	Jun '58
97 BMW, Blytheville	Aug '58

OVER NINETEEN YEARS

940 AREFG, Mather (USAFR)	May '59
307 AREFG, Travis	Sep '59

OVER EIGHTEEN YEARS

19 BMW, Robins	Oct '60

OVER SEVENTEEN YEARS

151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61
134 AREFG, McGhee Tyson (TNANG)	Aug '61
42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69

OVER SIXTEEN YEARS

340 AREFG, Altus	Feb '62
301 AREFW, Rickenbacker	Jul '62
96 BMW, Dyess	Aug '62

OVER THIRTEEN YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64
320 BMW, Mather	Jul '65
452 AREFW, March (USAFR)	Sep '66

OVER ELEVEN YEARS

92 BMW, Fairchild	Feb '67
55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67

OVER TEN YEARS

319 BMW, Grand Forks	Dec '67

OVER NINE YEARS

5 BMW, Minot	Feb '69
42 BMW, Loring	Sep '69

OVER EIGHT YEARS

141 AREFW, Fairchild (WAANG)	Oct '69
28 BMW, Ellsworth	May '70

OVER SIX YEARS

7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
416 BMW, Griffiss	May '72
305 AREFW, Grissom	Aug '72

OVER FIVE YEARS

376 SW, Kadena	Nov '72
379 BMW, Wurtsmith	Apr '73

OVER FOUR YEARS

384 AREFW, McConnell	Mar '74
189 AREFG, Little Rock (ARANG)	May '74

ICBM

OVER FOURTEEN YEARS

90 SMW, F E Warren	Jul '64
1 STRAD, Vandenberg	Sep '64

OVER THIRTEEN YEARS

308 SMW, Little Rock	Aug '65

OVER EIGHT YEARS

341 SMW, Malmstrom	Apr '70

OVER FIVE YEARS

390 SMW, Davis-Monthan	Jul '73

OVER FOUR YEARS

351 SMW, Whiteman	Oct '74

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.